Volume 2, Number 5 July 15, 1990

Fidonet HAM/PACKET Digest - For up to date HAM/PACKET info
Established March, 1989
Published by : Brian Murrey KB9BVN at Indpls, IN
SouthSide BBS (317)882-9330
Send all article submissions to Brian Murrey at 1:231/30
Or via GEnie address MURREY
SouthSide BBS
Mail articles to: PO Box 47453
Indpls., IN 46247

Fidonet is a registered trademark of Tom Jennings, Box 77731
San Francisco, California 94107

T A B L E O F C O N T E N T S

Volume 2, Number 5 July 15, 1990

E D I T O R I A L S

This issue contains a very interesting story about how POW's were able to arrange an escape from the enemy by using a homemade and very crude radio set-up. Lot's of other goodies as well. Enjoy!

This newsletter is and has been distributed via the Fidonet SDS, it is also available for downloading from GEnie, and the SouthSide BBS. File requests are not honored between the hours of 3am to 5am EST.

73 de KB9BVN

SouthSide BBS - 317-882-9330 - 12/24/9600 HST (no 300 baud)
(Node 1:231/30)

I hope you enjoy this issue!

==========

B U L L E T I N S

==========

==
| Relayed from packet radio via |
| N8EMR's Ham BBS, 614-895-2553 1200/2400/9600/V.32/PEP/MNP5 |
==

QEX - The ARRL's Experimenters Exchange - GATEWAY Column - July 1990
Edited By Stan Horzepa, WA1LOU - 75 Kreger Drive - Wolcott, CT 06716

WO-18 CCD CAMERA IRIS SETTINGS EXPERIMENTS

For the past several weeks, WEBERSAT-OSCAR-18 (WO-18) has been sending three to four pictures daily from outer space. This continuous stream of imaging data has been part of an ongoing experiment by the students at Weber State University to characterize the amount of natural light which enters the CCD camera for the various iris settings. The goal of this experiment is to find the proper settings for the camera iris for a particular light level in order to improve the overall picture quality.

With the integration of the on-board Earth sensors in the current software, the occurrence of overexposed pictures or totally dark pictures taken when WO-18 isn't pointing at Earth is no longer a problem. Chris Williams, WA3PSD, says that the painstaking task of manually setting the iris from the ground and observing the results will help software engineers in the future as they continue to understand the CCD camera operation. "The early days of random picture taking are gone," according to WA3PSD.

There are 256 possible iris settings which ground controllers can command. A "zero" setting completely closes the iris and a "255" setting opens it wide. The result of this experiment will be a look-up table in WO-18's software which will say "for this light level, use this iris setting." For those wishing to take part in this experiment, WeberWare version 1.0 is currently available from the AMSAT Software Exchange. Contact the Exchange at 301-589-6062 for further information.

from AMSAT

NORTH EAST DIGITAL ASSOCIATION FILLING A NEED

The North East Digital Association (NEDA) was formed to support packet-radio networking in the Northeast. The association's main purpose is to maintain a reliable inter/intra-state packet network that is useful to Amateur Radio operators for emergencies, education and the fun of the hobby. Currently, NEDA's network extends throughout central New England and New York State.

NEDA is a member-supported organization. Members are those hams who feel that the cause of packet-radio networking is worth funding. The goals of NEDA are to form and maintain a reliable and consistent long distance

packet-radio network, to educate Amateur Radio operators as to effective methods of long distance packet-radio network construction and operation

(NEDA creates and distributes documentation; their 20-page introduction package is an instruction manual for using the network), to provide equipment for sites required to implement redundancy in the major backbones, to provide a common ground for different organizations that are doing long-distance packet-radio networking in the hopes of sharing resources (to achieve NEDA's goal of redundancy with minimum wasted effort).

New NEDA members receive a 20-page information package which includes basics of networking, network maps, instruction manual, who to contact, what it takes to make a node and information on NEDA's node configuration policy. After each quarterly Board of Directors meeting, NEDA sends a copy of the quarterly letter to voting members, supporting members, and clubs that are members. The quarterly includes the latest maps, Treasurer's report, Board of Director's meeting minutes and articles.

NEDA members may send an SASE at any time for copies of the current maps. NEDA maintains eight maps: a user port map and backbone maps for each of NEDA's divisions (Finger Lakes, Hudson, Massachusetts and New Hampshire). NEDA is also committed to generating documents on subjects related to network design and management. These are announced in the quarterly when they are available.

For information on supporting NEDA, send an SASE to PO Box 563, Manchester, NH 03105-0563.

from North East Digital Association

G8BPQ PCNODE VERSION 3.57 AVAILABLE

Version 3.57 of G8BPQ PCNode is now available and includes "multi-KISS," a protocol for operating multiple KISS TNCs on one serial port, improvements in the PK-232 host mode interface for AA4RE BB, an internal KISS interface for TCP/IP applications and several bug fixes. The software may be downloaded from CompuServe's HamNet as a self-extracting LHARC archived file called BPQ357.EXE.

MACINTOSH TCP/IP VERSION 2.0 READY

Version 2.0 of the Apple Macintosh TCP/IP software is now available with a number of enhancements, support for the new features found in the PC versions (including NOS) and bug fixes. The software may be downloaded via

Internet using `anonymous ftp' from apple.com, in the directory `pub/ham-radio' or from the N6OYU landline BBS at 408-253-1309 (1200 to 9600 baud). You may also send a $5 donation to Doug Thom, N6OYU, (c/o Thetherless Access Ltd, 1405 Graywood Dr, San Jose, CA 95129-4778) to obtain a diskette containing the software.

from Doug Thom, N6OYU

C-64 TERMINAL PROGRAM FOR BLIND HAMS

Jerry Johnson, K0QQS, wrote Packet Reader Program, a packet- radio terminal program for his blind friend, John Bloom, K0GCY, that uses a Commodore C-64 computer and Votrax Vo-Talker voice synthesizer. The software causes the

synthesizer to read each letter or word as it is typed and to read packets as they are received. Received packets are buffered so that they can be repeated as needed. The program also uses the C-64's disk storage capabilities. For information on how to obtain a copy of the program, send an SASE to John Bloom, K0GCY, 1312 North Union, Fergus Falls, MN 56537.

from John Bloom, K0GCY

CONNECTIONLESS MAIL PROTOCOL AND MORE

It seems to me that the main use of our network is for the transfer of items of general interest (bulletins), first, and personal mail, second. Now this may seem a bit strange particularly when one could put a reasonable case that there are more personal messages generated than bulletins (I do not go along with this, but am willing to be convinced). The trouble is that personal mail has an origin and one destination, bulletins have an origin by N destinations where N is at least every PBBS in the country!

The majority of traffic is the sending of bulletins to every PBBS, ie, over and over again. This leads people, who think in terms of telephone lines, to say we must rationalize, we must stratify, more channels, more bands, etc. Can you not see the beauty of one channel with many stations listening, in other words, use the broadcast nature of our medium. Why must we always think in terms of telephone lines? We are not on the telephone, we are not in a one-to-one, origin-to-destination situation. We can broadcast. Think about it.

Anyway, after a year or so saying I really must do something about it and writing the specification outlined below, I have also started writing a

simple terminal program/conferencing system/PMS/PBBS (I haven't quite worked out what it will be yet). One of this program's features is that it listens to the channel and tries to generate messages out of the many copies of a bulletin that are sent. It turns out that it receives between 50 and 90% of all the messages that pass by it on any particular pass through depending on who is sending what to whom locally. This means that there are four local sub-PBBSs and also the original feeds to our local NTS station that I can get 95% or more of my bulletins directly from without actually being connected at any time.

I must say at this point that I don't necessarily believe that we need only one channel. Trunking should occur elsewhere, but I do believe that we should start thinking about what we are using, its nature and use the properties of our medium to the full. I also say that it may be that we could use far less equipment to achieve our goals if we do not go down the "professional's route." One could also ask what would be the point of emulating a known solution? I thought we were in this hobby to invent new and better ways and means. Why else are we tolerated in the busiest and most commercially valuable portions of the spectrum?

What I have done so far, which is merely some fancy pattern matching on monitored BPQ data, is not perfect. It gets it right 99.98% of the time and, as such, is not suitable other than for a leaf PBBS or PMS system. I have designed a UI protocol which could give 100% data integrity while still retaining the flavor of the broadcasting mechanism. I outline it below.

CONNECTIONLESS MAIL PROTOCOL AND MORE - Continued

UI Frame Connectionless Mail Protocol Specification Version 1.00

The aim of this protocol is to utilize the broadcast nature of the radio medium to minimize the amount of air time it seems to take to distribute the mail. This system is not meant to replace all of the current system of connections from one mailbox to another, but to optimize the distribution in a local area within range of a powerful node or other powerful repeating transmitter.

This specification is based on earlier work of mine and G8UFQ (now, sadly, deceased).

The basis on which this protocol is devised is as follows:

1. Radio is a broadcast medium, a packet (particularly if it is sent by a powerful and/or well sited transmitter) can potentially be heard by a large number of receivers.

2. The nature of the TNC, FM radio and CSMA environment is such that if a station can be heard loudly, then all other stations will tend to shut up until a suitable pause appears, at which point, they all tend to jump in.

3. The loudest station usually controls the flow traffic in a given area, thus any other station that uses that loud station usually gets more traffic through more quickly than if they go direct while the loud station is transmitting.

4. If we sent UI framed packets via the loudest station, they will be heard by many people (witness all the complaints about long beacon texts via several repeaters). If those packets can be uniquely identified as part of a particular message and also which part, then a basis of a simple connectionless mail protocol exists that more fully uses the broadcast nature of radio as outlined in (1) above.

5. The concept of acknowledging each packet correctly received is, I believe, inappropriate for a congested FM CSMA channel such as the ones we are using. Research has shown (ZMODEM protocol) that it is more efficient to say what you have not received. Further, because we are sending bulletins which are by their nature to be broadcasted, if the stations listening send their requests for the bits they missed, there will be overlaps such that any requests trampled on could be issued by another station anyway.

6. A bulletin is broadcast. This protocol is a means of broadcasting; the data therefore fits the protocol more nearly than the current method being employed. Individual mail probably fits the existing model quite well and would therefore continue to use the current system as would normal station-to-station conversation.

7. I believe it to be more efficient, overall, to send a complete message via a strong station and then wait for requests for retries of individual parts. In other words, to have a window size of infinity (or the size of

the message). Further, because of the long delays between the TNC noticing a clear channel and the transmission actually being heard at full power, it will probably be necessary to send the first packet of a string twice or maybe three times because of the likelihood of its being trampled on by other stations [the main reason why the AX.25 fixed window

size of >1 has been shown to be worse than simple window sizes of 1 (KA9Q)]. I propose to overcome this problem by using selective reject rather than the current system of `start again from the beginning even though I did in fact hear your last three of that window of four.' This will be used in the style of the ZMODEM protocol detailed in (5) above. Because we will probably be repeating, we will need to send packets at reasonable intervals (say 0.5 seconds) in order for the repeater to receive and onward transmit it, this parameter must be tunable to allow for local conditions.

Some Details

AX.25 allows up to seven packets to sent at a time in one gobbit of packets. Therefore, it will be necessary to send a gobbit of 1 to 7 packets, possibly with the first one repeated as it almost certainly will not be heard on a busy channel. Experiments will have to be conducted to find the optimum number of packets to send in a gobbit, taking into account direct broadcast or via a repeater.

Each packet should contain the following info:

o 1-byte Signature (suggest "~") to indicate to the software that this packet may be of interest

o 1-byte Flag to determine the type of packet.
  M for mail
  H for the mail header (from, to, subject, etc)
  E for end of message
  R for repeat request
  A for I am active request (could cause mail to be sent to you)

o 14-byte BID. A standard bid, eg, 12345_GB7TLH, some unique message ID, all messages (even mail) has some implicit bid of this form, but it need not be like that above. Anything unique would do. Left justified, excess padded with spaces.

o 5-byte Offset. The offset of this packet within this message. This is used differently in types H and E.

o 200-byte Data. This, of course, contains the data.

Contents of Data Portion

H - It is suggested that this is of fairly standard form, ie, SB ALL @ GBR < G1TLH xxxxxxxxxxxxxxxxxxxxxxx where the offset in the header is the size of the message and xxxxxxx is the title. All portions contain the BID.

M - The actual data portion of the message split up into 200-byte chunks.

The offset incrementing 200 bytes (or whatever) for each packet. The length of the message and, thus, that of the last packet is arbitrary.

E - Indicates end of message. It has the length of the message in the offset position. It may be useful to have a CRC16 checksum in hex (4 bytes) in the data portion (then again it is probably overkill).

R - Request for more data, in the form address/length. These are free format pairs (starting with the offset position as the first address), eg, 000128/200, 600/200, 1200/400. Each pair is separated by a comma and the last one is followed by a full stop (which could be left out).

A -This is sent by a THL style box when switched on to say here I am, anything interesting?

Addressing Issues

The unproto mail address needs some definition. In order to recognize a packet coming in as being relevant, it must pass certain tests.

1. It must be a UI frame.

2. It must contain the signature character `~' in the first byte of the information part of the frame.

3. The mail broadcasts need to be identified as such and so an unproto address of $$MAIL is suggested. Replies could contain this address for general work, but if a significant number of packets with a particular originating call sign are received, it is better to use an unproto address of that originating call sign such that only that station replies to requests for more data. This should go some way to preventing race conditions when two or more originating stations have the same BID and start replying.

The receiving station will need to be discriminating about who it uses to poll for requests and, if it gets packets from other stations with the required information, it must discard them, but possibly remember the call signs in case of failure with the original station.

A Sample Conversation

```
GB7TLH>NP2>$$MAIL <UI C>:
~H12345_GB7VLS 01200SB ALL @ GBR < G9ABC FRED BOGGS IS LICENSED

No reply - wait say 5-7 seconds

GB7TLH>NP2>$$MAIL <UI C>:
~H12345_GB7VLS 01200SB ALL @ GBR < G9ABC FRED BOGGS IS LICENSED

No reply - wait say 5-7 seconds

GB7TLH>NP2>$$MAIL <UI C>:
```



```
~H12345_GB7VLS 01200SB ALL @ GBR < G9ABC FRED BOGGS IS LICENSED

This is repeated 3 to 5 times

G4RQN>GB7TLH <UI C>
~R12345_GB7VLS 00000/1200

This indicates that you wish the whole lot to be sent. This may be sent
three times at one-second intervals, but could perhaps be sent up to 10
times as it constitutes `retries.'

I also may receive

GB7RWN>NP2>GB7TLH <UI C>:
~R12345_GB7VLS 00000/1200

and

GB7LDI>NP2>GB7TLH
~R12345_GB7VLS 00000/1200

So I send

GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 00000xxxxxxxxyyyyyyyy etc etc
GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 00200aaaabbbbbbccccccdddd etc etc
GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 00400eeeeeeeeffffffffggggg etc etc
```

```
GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 00600hhhhhhhhiiiiiiiijjjjjj etc etc
GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 00800kkkkkkkkllllllllmmmmmm etc etc
GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 01000nnnnnnnnooooooppppppp etc etc
GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 01200qqqqqqqqrrrrrrssssssss etc etc
GB7TLH>NP2>$$MAIL <UI C>
~E12345_GB7VLS 01200
```

I then might receive

```
G4RQN>GB7TLH <UI C>
~R12345_GB7VLS 00400/200,1000/200
GB7RWN>NP2>GB7TLH> <UI C>
~H12345_GB7VLS 00200/400
GB7LDI>NP2>GB7TLH <UI C>
~H12345_GB7VLS 00000/0,1000/200
```

This means that the need to resend packets 200, 400 and 100 and also 00000/0 is special. The station either has not heard the header or has woken up in the middle of this exchange and wants to catch up. 00000/0 will cause resending the header packet. It may be worth sending it at the start of an exchange in the first transmission of the message as a `noise' packet that causes the channel to be `grabbed' for this exchange.

So I send

```
GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 00000xxxxxxxxyyyyyyyy etc etc
GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 00200aaaabbbbbbccccccdddd etc etc
GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 00400eeeeeeeeffffffffgggggg etc etc
GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 01000nnnnnnnnooooooppppppp etc etc
GB7TLH>NP2>$$MAIL <UI C>
GB7TLH>NP2>$$MAIL <UI C>:
~H12345_GB7VLS 01200SB ALL @ GBR < G9ABC FRED BOGGS IS LICENSED
```

As you will note, these need not be in any particular order, thus, should be slotted in the appropriate place.

I may then receive

G4RQN>GB7TLH <UI C>
~R12345_GB7VLS 00400/200,1000/200

Because there is only one packet to be sent, I send it twice to make sure.

GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 00400eeeeeeeeffffffffggggg etc etc
GB7TLH>NP2>$$MAIL <UI C>
~H12345_GB7VLS 00400eeeeeeeeffffffffggggg etc etc

I now wait 5 to 7 seconds to see if there are any more. If not, I continue with the next one or shut up if there are no more.

Now there is a potential problem here in that I might receive a delayed request for a packet from the previous message. Two strategies might be used to cope with this. Either note the request and ignore it for the time being or keep the previous message file open and satisfy the request among the rest of the current message. If the first method is used, the current message is run out and the packet(s) from the previous message are then sent.

The reader will note that now three stations have obtained the six packet bulletin at a cost of 11 information packets from the originating station including retries. The actual level of retries is probably optimistic, but even on a dead, quiet channel, you would require 18 packets to be sent to do the same job without retries.

I think it likely that each originating station will have a list of people it is prepared to satisfy requests from to cope with lift conditions, but it may be possible to have a two-tier system in which a distant or unknown station can receive service, but only if a reasonable number of packets seem to be getting through, eg, locals may be allowed 10 retries but unknown stations only 3. After all, if conditions are that good they should be utilized.

This is preliminary, any comments, suggestions, etc would be gratefully received.

by Derek Koopman, G1TLH from Connect International via Hank Greeb, N8XX

A NEW SERVICE, THE CALL SIGN SERVER

After I did a few keyboard-to-keyboard connections and PBBS log-ins, one of the problems I found with packet-radio communications was what else does it do for me. I can send mail to all those people out in packet-radio land that I do not know, and I can watch messages fly by that don't interest me. What was missing was a true user application. I thought, there has to be something we can do for the packet-radio community.

One afternoon, I was logged into Internet (a worldwide computer network) and saw a message that a group of people were putting a project together to acquire a copy of the Amateur Radio call-sign data base from the FCC. Great! I could put together a service whereby people could contact my packet-radio station and lookup a call sign. This could be an interesting service and, if successful, provide something useful to the community. Since I knew one of the people involved in getting the data, I contacted him and got a copy of the database.

As it turned out, the actual data file is 108 Mbytes in size and contains over 435,000 call signs. Unfortunately, it contains only US call signs, but that's a great start. In addition to the call sign, each record of the file has the mailing and station addresses, the class of license, previous call sign, renewal/process/expiration dates, and even the persons birthdate! Now all I had to do was figure out how to provide access to this data from my packet-radio station, how to store this huge database file, and how to tell people about it.

I was working on another project, porting the KA9Q TCP/IP package to the Macintosh computer, when several people asked the same question, "What are we going to do with TCP/IP?" It is certainly a neat system, but without applications to use it, it suffered the same old problem. Then the light flashed! How about interfacing the call sign database to one of the TCP/IP servers... like the finger server?

The finger server is a utility built-in to the TCP/IP package that allows a remote station to query your station for basic information. "Great idea," said Dewayne Hendricks, WA8DZP, the programmer who did all the work, and in a few days he had written the initial code to access the call sign data file. It took several more weeks of debugging and testing, but finally we had an extension to the finger command. Below is an example of how this all works (bold character are typed by the user). [Bold characters indicated between *s.]

net> *finger %wa8dzp@n6oyu*
SYN sent
Established
[N6OYU]

Name: DEWAYNE L. HENDRICKS

License: WA8DZP
License Class: E
Mail address: 43730 VISTA DEL MAR, FREMONT, CA 94539-0000
Station address: 43730 VISTA DEL MAR, FREMONT, CA
Effective date: May. 17, 1988
Expiration date: May. 17, 1998
Previous Callsign:
Previous Class: A
Birthdate: Oct. 11, 1949
Process date: May. 17, 1988

Close wait
Last ACK
Closed (Normal)

Note the use of the %callsign@N6Oyu syntax in this command. The typical finger command looks like this:

net> *finger doug@N6Oyu*

This will look for a text file named "doug" on the system diskette and copy its contents to the TNC. With the call sign server extension, we added the *%* to tell the finger server to lookup the following call sign in the data base and return that information to the TNC.

As it turns out, TCP/IP allows the use of another command to query information provided with the finger command. This involves using the telnet ommand (telnet is the command used for keyboard-to-keyboard communications with another TCP/IP station). This gets fairly complicated, but suffice to say, it works. Below is another example of using the telnet command to get the same information.

net> *telnet n6oyu 79*
SYN sent
Established
[N6OYU.norcal.ampr.org]
%ka9q

Name: PHILIP R. KARN JR
License: KA9Q
License Class: E

Mail address: 25B HILLCREST RD, WARREN, NJ 07060-0000
Station address: 25B HILLCREST RD, WARREN, NJ
Effective date: Sep. 27, 1988
Expiration date: Sep. 27, 1998
Previous Callsign:
Previous Class:
Birthdate: Oct. 4, 1956
Process date: Sep. 27, 1986
Close wait
Last ACK
Closed (Normal)

In the above example, *79* tells the telnet server to forward the request to the finger server, which in this case is the *%ka9q* on the next line. The

server processes the request as before.

A NEW SERVICE, THE CALL SIGN SERVER - Continued

This was all fine, but what about all the rest of the packet-radio users that do not have the TCP/IP package up and running? Well, TCP/IP will support AX.25 connections and provides a mailbox function. So, Dewayne also wrote some code to extend the mailbox function to permit inquiries of the database. The addition of the inquire command to the mailbox code now provides AX.25 connections access to the database. Below is a sample of the process.

Connect N6OYU
Conn pending
Connected
<carriage return>
[NET-$]
Welcome to the N6OYU.norcal.ampr.org TCP/IP Mailbox
(C)hat (I)nquire (S)end (B)ye
I K6LLK

Name: JOHN D. CRONIN JR.
License: K6LLK
License Class: E
Mail address: 1543 FORDHAM CT, MOUNTAIN VIEW, CA 94040-0000
Station address: 1543 FORDHAM CT, MOUNTAIN VIEW, CA
Effective date: Dec. 9, 1986
Expiration date: Dec. 9, 1996
Previous Call Sign:

Previous Class:
Birthdate: Jan 1, 1944
Process date: Dec. 9, 1986
(C)hat (I)nquire (S)end (B)ye
B
Disconnected

Now all packet-radio users have access to the call sign server via several different mechanisms. Since bringing up the sever, there have been over 3500 accesses over a six-month period. The service proved especially useful during the last Field Day exercises with several hundred requests during the weekend. An additional observation is to see what each new user does with the server. First, almost without exception, everyone looks up their own call sign! Then they look up their friends.

What is all this running on? The database file is on a 300-Mbyte hard disk drive which is connected to a Macintosh Plus computer running Apple's AppleShare file-server software. The radio is a Yaesu FT-211RH connected to an AEA PK-232 TNC and another Macintosh Plus computer running the Macintosh version of the KA9Q TCP/IP package. The two computers are connected together via LocalTalk (Apple's networking system). My Macintosh II color system and a LaserWriter IINTX printer also share the network.

The future holds many changes for the service. The first will be a more current data file. Next, we plan on changing the method of access. As it stands currently, the only way to get call sign information is to directly

connect to my station via either AX.25 or TCP/IP. What we plan on is similar to the White Pages lookup system that is available now in the PBBS network. You will be able to send a message to the system with whatever means you have and the system will send a reply message with the call sign information you requested. Now back to the coding.

One last note. You can connect to my station on the TCP/IP frequency of 145.75 MHz.

by Douglas Thom, N6OYU from NCPA Downlink

GATEWAY CONTRIBUTIONS

Submissions for publication in Gateway are welcome. You may submit material via the US mail or or electronically, via CompuServe to user ID 70645,247 or via Internet to 70645.247@compuserve.com. Via telephone, your editor can be reached on evenings and weekends at 203-879-1348 and he can switch a modem

on line to receive text at 300, 1200 or 2400 bit/s. (Personal messages may be sent to your Gateway editor via packet radio to WA1LOU @ N1DCS or IP address 44.88.0.14.)

The deadline for each installment of Gateway is the tenth day of the month preceding the issue date of QEX.

DOVE turn on - N4HY

I finally got together enough modified loader code so that we can bypass this problem with the DOVE S band modulator. Hugh Pett, VE3FLL, original author of the BOOTLOADER running on all four microsats, and I worked together for several days getting together a

subset of the loader on board, and a modified version of the ground station bootloader exerciser.

The problem with DOVE has been caused by a failure (we believe of a silver mica cap) in the modulator for the S band transmitter. This failure caused the data modulation index to be VERY small. The total phase shift was much less than 180 degrees for a data 1. It was so small that no existing standard PSK modem (TAPR, PACCOMM, or G3RUH) could demodulate it. I wrote a DSP based demodulator that worked fine by moving around the place where the data was sliced. The problem with this approach is that I have a pretty good S band receive setup but not a great one. I couldn't give up the DSP modem as I was doing code development on it for AEA. I finally decided that the one and only weekend I could work on this was this coming weekend and I prepared to go to Boulder to the home of K0RZ. Bill has an outstanding S band setup and is a satellite afficionado. This put me so far into the doghouse at home that I became frightened into the solution that I should have come up with three months ago.

If we could just get a few hundred bytes into the spacecraft by ASSUMING when we heard any response it was an ack, then we could put in a loader that didn't have the faults of the one we flew. I made a mentat computation (in other words I hoped ;-) that if I heard a response from the spacecraft when I sent these ten packets the probability that the response was a NAK instead of an ACK would be low. Furthermore, since this code did NOTHING to the modules in the spacecraft around the transmitter, then the likelihood of doing something dumb if one of the packets was a NAK would be low. The watchdog would just not be banged and it would reset back to the ROM or I would have to resend the reset signal. The only thing that could really go wrong is by some freak accident the 2 meter transmitter got turned on. I really did view this probability to be exceedingly small. So I risked sending code in the blind. The loader came up and from all indications functioned perfectly from the first try. Last evening, K0RZ hooked up a phone patch to his rig and I transmitted load commands to DOVE on two meters. I could easily hear the ACK (remember NAKS are no longer transmitted) and hit the `continue on with the next packet' key now built into the ground station loader code. I finished the operating system (kernel) in one half of a pass. This morning, I found the main problem with the S band system at my house (a lousy job on an N connector in the line between the S band antenna and the S band preamp). After I fixed that up, I was able to load half of the remaining code in two passes. Unless something is really wrong, I will be turning DOVE's 2 meter transmitter (145.825) on by this weekend. All appears to proceed normally.

Bob N4HY

==========

A R T I C L E S

==========

Date: 01 Jul 90 18:11
From: KF7VY@KD7NM
To: ALL@ALLUSW
Subject: Hams to lose UHF freq? 1/5

Hams to lose all UHF Freqs?
July 1, 1990

Sorry for the alarmist title but often it takes a knock on the head to wake up.

As you know, ham radio recently lost 2 MHz of spectrum at 220-222 MHz. But did you know that in roughly the last TEN years, ham radio lost an astounding 91 MHz! That works out to 9 MHz per year from 1980 to 1989, making 1989's loss of 220-222 MHz a very good year for ham radio.

Between 1980 and 1989, the U.S. Amateur Radio Service lost forever, a total of 117 MHz of spectrum in the VHF/ UHF region alone:

420-430 MHz north of 'Line A'.
1215-1240 MHz .
2310-2390 MHz.
220-222 MHz.

The only good news is that we did get 902-928 MHz, for a net loss of 'only' 91.00 Mhz.

What is so frightening about all of this is that the strong arguments we presented to the FCC to save 220-222 MHz were not good enough - and do you seriously believe that we can provide better arguments to retain our holds at 902, 1240, 2400 or even 440 MHz?

Fast Approaching Demands on the Spectrum

Cellular telephones and high definition TV (HDTV) have all received a great deal of press regarding their growth and demands on spectrum. Lesser known are a number of new technologies that will start to come on line during the coming decade and which will demand their own frequency allocations.

Coming soon is the Personal Communications Network, which is best described as a 'micro cellular' system. The idea is that cells will shrink to less than 1 kilometer in size (in some cases maybe a hundred meters) as this is the only way that huge numbers of portable telephones can be accomodated. Conceptually every city block, every shopping center, every business will have a cell site. The single 'cordless phone' that you use at home will operate at your business, at the airport or while shopping. PCN is for real: A U.S. company

has received FCC approval to build a pilot system on the east coast. Some systems are already operating in the U.K.

Even cellular is already maxed out in many areas. Today there are 3.5 million cellular subscribers with forecasts that the number will reach 28 million subscribers by 1997. That means that roughly 1 out of every 10 people in the U.S. will have a cellular telephone.

The cellular industry is looking to new technologies, especially digital cellular that will enable them to multiplex multiple signals, and hence, make better use of the available spectrum. Undoubtedly, they will want more spectrum.

Motorola has announced plans to build a world-wide satellite and terrestrial based cellular phone system. Using a large number of low earth orbit satellites, the system will provide worldwide telephone service from rural and remote areas of the entire world. When the user travels into a metropolitan area, the system will automatically switch from satellite operation to the terrestrial cellular phone system.

Before the end of this decade, Digital Audio Broadcasting will likely make its debut. Just as FM broadcasting has nearly replaced AM radio, DAB may do the same, providing CD quality audio broadcasts. This digital broadcasting system will soon be seeking a dedicated frequency allocation, allegedly in the 1.2 to 2.0 GHz range.

And if that were not enough, virtually every single radio service currently in existence is seeking additional allocations.

The Impact

Last month (June 21, 1990 news report), Rep. Edward J. Markey (D-MA) introduced legislation forcing the Department of Defense to give up some of its frequencies. On June 18th, the House committee on Energy and Commerce unanimously approved a bill that would force the U.S. government to give up its hold on large segments of spectrum that it now holds.

Is this good or bad? Considering that ham radio shares frequency allocations with military radar allocations (go take a look at Part 2 of the FCC rules), this means that ham radio could easily lose significant chunks of spectrum. Only 430-440 MHz is an international ham radio allocation; 440-450 is US domestic only and is shared with military radar, as are 1240 to 1300 MHz.

Meanwhile, the Bush adminstration has gone on record saying that it favors the concept of selling 'access rights' to the spectrum. Industry analysts have said that market prices for 1 megahertz of prime spectrum might easily fetch 8 to 10 BILLION DOLLARS. Its hard to see how ham radio can compete with such dollar valued market forces.

Today, approximately one half of the FCC's employees are lawyers. How

much do you think the FCC's lawyers value ham radio's contributions to packet radio technology, low cost PACSAT satellite technology and other breakthroughs or even the unbelievably extensive public service of volunteer ham operators?

If all this isn't gloomy enough, restrictive antenna ordinances (the private ones NOT covered by PRB-1) are establishing defacto prohibitions on HF ham operations, at the same time that we are losing our VHF and UHF allocations.

Do we need VHF or UHF frequencies? You had better believe we do! Wide band modes such as ATV and high speed packet are only allowed at UHF frequencies. Packet networks and conventional voice repeater links and control circuits operate on these frequencies. Even if you do not personally use these frequencies, chances are good that the FM voice repeaters or the packet BBS station that you rely upon, all use these frequencies. Further, our future growth and experimentation of

new technologies absolutely depend upon the availability of adequate spectrum. Even if you don't see the personal need for these frequencies, the Amateur Radio Service as whole is utterly dependent on these allocations for its future existence.

The Solutions?

Part 15 devices to save us?

Most hams do not realize that virtually all of our VHF and UHF bands are shared allocations, generally allocated to other services such as military radar. In effect, these are 'junk' bands that are incapable of serving the needs of paying customers.

We also share several UHF and SHF bands with unlicensed Part 15 devices, and strangely, the 'junk' nature of these bands may actually save them for ham radio. For example, 902-928 and 2400-2450 MHz are shared 'junk' allocations used also by Part 15 and Industrial, Scientific and Medical transmitters. For example, ordinary microwave ovens operate at 2450 plus or minus 50 MHz.

Right now, nearly a dozen companies are selling or will shortly be selling 1 watt high speed data transceivers in the 902 MHz band. These units operate spread spectrum and have claimed ranges of up to 10 miles; external antennas are allowed. Meanwhile, other companies are building digital cordless telephones on top of this technology. Since these data transceivers operate at a 200 kbps rate, its easy to use them as a basis for long range digital cordless telephones. I suspect we will see the first digital cordless phones, with a 2 to 5 mile range, costing $400-$500 dollars by mid-1991, with shipping units by Christmas of 1991.

Other applications include non spread spectrum, very short range, wireless connections between VCRs and TVs throughout the house.

Fortunately, the FCC made it very clear that the Part 15 devices are

3rd class citizens here and must put up with interference. Especially noteworthy is that these Part 15 devices will be interfering with each other! In effect, the FCC has recognized that these are 'junk' bands and this may actually help save these bands for ham radio use too (but note that we may already have lost access to 920-928 MHz - see below).

Furthermore, there isn't any reason why a licensed ham radio operator couldn't add a 50 watt amplifier to one of these units and end up with a low cost, mass produced high speed digital data network - unless of course, the FCC bans the sale of 900 MHz amplifiers, just as they banned the sale of 10/11 meter amplifiers!

Increase our Numbers

Ham radio must increase its number of licensees. Between 1980 and 1990, ham radio grew at an average annual growth rate of 2%. That compares to growth in other radio services of many tens of percent per year. Since we are all competing for the same spectrum, guess who wins the request for more spectrum and guess who loses?

The issue over a no-CW class of ham radio license isn't one over whether or not a CW-illiterate license will obliterate ham radio. The choice is whether or not we want to share our VHF and UHF frequencies with licensed ham operators who have passed a technical exam but no CW test, versus losing those frequencies within the next few years to Landmobile and other services who are starving for allocatinos. Most of us would at least like to continue to have access to some of that spectrum versus having industry slam the door in our faces.

The FCC, actually, has been extremely supportive of ham radio. But, based on our relatively low numbers, they cannot continue to justify our radio allocations against the demands of other services. The CW-illiterate license proposal may be their last opportunity for the Amateur Radio Service to kick us into significant growth. If this fails, or if the growth fails to materialize, there are literally hundreds of other services waiting for those frequencies.

The ICOM advertising department has perhaps seen another alternative to help spurn ham radio growth: during the past year or so, their ads have deliberatly emphasized hamming as an activity appropriate for the entire family. Not just Dad, but Mom and the kids too. Maybe the view of hamming as a life-of-leisure, sit back and talk to the world for hours on end, has become dated. Today, when Dad and Mom both work just to meet the mortgage payments, hamming is way to keep in touch and to enjoy social contact on the daily commute. We need to explore new concepts as to what, exactly, ham radio is going to become in the coming decade and in the next century.

Turn the ARRL into a political organization?

The ARRL must increasingly turn itself from a fraternal organization to a politically active organization, similar to the Sierra Club or

the Aircraft Owner's and Pilots Association. These organizations both do an excellent job of motivating their memberships to write Congressman and to take an active role in preservering either the environment or access to the nation's airspace, respectively. The ARRL is currently very poor in this regard and needs to focus attention in QST and elsewhere on the real life political issues facing ham radio today. Most hams are largely oblivious to the technologies and political forces that will be raining upon us during the next decade.

The ARRL is our only national representative. I fear that in the next 1 to 2 years, ham radio may lose additional UHF frequencies (portions of 902-928 MHz, especially 1240-1300 MHz, very likely 420-430 over the rest of the U.S., and potentially even 440-450 if military radar goes away) and that this could result in a backlash against the ARRL, and the rise of a second national ham radio organization. It is not at all clear that 2 voices would be better than one.

What to do?

I strongly urge you to discuss these issues with your ARRL Division Director and ARRL Section Manager and certainly other ham operators. Let's get the ball rolling and let's meet the challenges of the 1990's head on. Most of all - DO SOMETHING! Ask yourself that famous question: What are you, personally, doing to help promote Amateur Radio?

I welcome your thoughts and comments,
Ed Mitchell
KF7VY @ KD7NM.#WWA.WA.NA.USA

P.S. During the weeks that I have written this note, the 'hot' topics on the packet BBS network have been:

- code versus no code
- handicapped access without 13 or 20 wpm code
- closed repeaters

All of these are important issues. However, I fear that we are

putting an enormous amount of emotional enery into arguing about the quality of each tree - while the entire forest is rapidly being cut down to make way for a new development!

Please, let's get some constructive dialogue going on the basic issue of ham radio existing at all!

CRYSTAL SECRET: BUILDING A RADIO IN A JAPANESE P.O.W. CAMP

by Brigadier General John F. Kinney, UMC (Ret.)

As a pilot of Marine Fighter Squadron VMF 211, I landed aboard the aircraft carrier USS Enterprise on 28 November 1941 and was soon startled to hear over the loud speaker system: "...Now hear this...this is war order Number One...! We are on our way to Wake Island to deliver VMF 211..." The Japanese Pearl Harbor attack force was already en route in the northwestern Pacific...

[W]e landed at Wake on 4 December... Four days later (7 December at Pearl Harbor; 8 December at Wake across the Date Line) we were hit with the devastating results shortly after the Japanese hit Pearl... After bitter fighting the island was overrun. There was no alternative except surrender...

We were shipped off to prison camps in Japan and China on 12 January except for about 100 civilians retained on Wake and later executed. As POW's we were determined to carry on our resistance in whatever way we could. The Japanese tried to completely isolate us... Aside from lack of food and warm clothing, we had difficulty adjusting to the boredom. We were not permitted to hear any news of home or the war...except what the Japanese wanted us to hear.

At Woosung POW camp, near Shanghai, China, the Japanese camp commander

knew that we would get satisfaction from news as well as some intelligence from knowledge of where battles were occurring. I, for one, needed news to update my escape plans.

Early in our captivity when the Japanese were making great advances and winning victories, they had provided us with 3 weak propaganda radio receivers. I soon modified one of these with parts and a diagram from Sergeant Blathazar Moore and First Lieutenant James D. (Mac) McBrayer. Shortwave broadcasts from San Francisco and New Delhi gave us knowledge of the first reverses the Japanese met from the U.S. in Guadalcanal in August 1942. At controlled hours, we were able to hear the regular broadcasts from Shanghai by the Vichy French and the Russians. The Russians avoided any comment on the war in the Pacific but seemed to give pretty good accounts of the European situation. The Vichy French broadcast the Japanese version of the Pacific campaigns, which I could check against the short wave versions. Soon after I spread the news of our successes in the South Pacific, the Japanese took away our radios and also conducted the most thorough search we had ever experienced up to this time. A possible cause for alarm to the camp commander could have been caused as I tuned across the frequency to which his radio was tuned. In this shakedown, we lost all of our short wave parts and all of the other radio materials...

I knew that our best source of news was from the English broadcasts

from Shanghai which would probably continue as long as the Russians were not in the war against Japan. We knew how biased the French reports were, but they did give us locations of action from which we could plot the progress of the war. Our problem was still that we had no radio, no earphone and no materials with which to build a receiver.

I discussed the wiring diagram for a crystal set with Sergeant Moore and Mac. We recognized that even if we succeeded in finding wire for coils, we had no crystal detector to transform the electrical pulses into audible sound. Moore and Mac had built crystal sets as kids and had studied radio. The problems were simple when parts could be purchased. They believed that the project was not possible with our limited resources. I had never built a set and thought we should try. No one thought we could build an earphone. Most of my contacts didn't want to take chances working on a project that couldn't succeed. There was always the chance of discovery and beatings to set an example to other POW's. I didn't think the project was impossible, so I decided to try on my own.

Back on the farm as a boy, I had often taken the receiver of our hand cranked battery powered party line telephone apart and knew how it worked. I knew what I needed to build an earphone. I could solve the problems of making electro magnets by windings on nails in contact with a magnet. But we had no magnets. There were none in camp.

Weeks later I remembered that there were magnets in speedometers. I thought that we could steal one from a Japanese truck. We had POW's working in a Japanese truck repair depot. I had two trusted civilian friends who worked in the camp's tin shop. Don Luddington was called "Big Tin Shop" by the Japanese interpreter; his partner was Fuller [who] was called "Little Tin Shop." I asked Little Tin Shop to have one of his friends look for the chance to steal a magnet... In less than a month I had a circular magnet that looked like a large "C." Some truck went south missing a few parts in the speedometer. At my urging, Big Tin Shop "procured" a damaged ignition coil from the same source and had it smuggled back to me. It contained miles of hairlike insulated wire. This was far better than I expected or hoped for.

The task was now all mine. I had to devise a way to mount the nails, wind the coils and space them under a diaphragm. I guessed that I would need at least 5,000 turns of the wire on each nail to actuate the diaphragm with a weak pulse of current. The method of mounting had to be sturdy enough for rough handling since I would often have sudden changes in plans as Japanese guards roamed through the compound. The earphone had to be capable of being easily hidden from guards as well as curious Americans. It had to survive frequent inspections and shakedown crews.

During 1943, the Japanese permitted a shipment of Red Cross food parcels to enter camp. These gave each POW a twelve pound package of food in small cans. We had now learned to save everything for future use. A Nescafe powdered coffee can was selected to be my earphone base. It would provide necessary concealment; it seemed to be about the right size and would look like any other powdered coffee can in camp. The electro magnets could be mounted on a circular piece of

wood. An 1/8" diameter piece of wire scrap from the 5,000 volt electric fence shaped into a circle could make the support for the vibrating diaphragm. A seal from an English tobacco can would be the diaphragm. In those days English seals were tin and not aluminum as they probably are today. The mounting brackets were metal from other food cans formed by makeshift tools. I was taught to make solder by

melting toothpaste tubes with lead scrappings by Big Tin Shop. Toothpaste tubes early in World War Two were made of pure tin instead of plastic as in use today.

Whenever there was no one close to watch, I worked on this project... My primary workshop was the benjo (latrine). The benjo did have doors over open pits giving a little bit of privacy in spite of the odor... I had three prime reasons for secrecy; first, I didn't want anyone to know about this project which could easily fail. Second, I didn't want the project talked about. Even a hope of news was news in those days and news traveled throughout the camp in a short time - this could be cause for another shakedown and loss of contraband materials. Third, I knew that in a shakedown if materials were found in our room, the Japanese had methods of making most anyone talk. I didn't want to subject my roommates to knowledge that could get them in trouble.

The winding of the nail/poles took about six months for the first 5,000 turns on each coil. There was much breaking of wire. The insulation had to be removed from the delicate wire, spliced, soldered and then reinsulated with paper.

When I completed the earphone, I had no way of testing to determine whether I had electrical continuity throughout the windings. I had no way of knowing whether other parts of the crystal set would work so I started a parallel effort to build the crystal set parts.

We were only about ten miles from Shanghai, China, and I planned to use the ground side of the 220 volt power line as my antenna since the lines went back to the transmitter station. My hopes of making a poor crystal set work were kept alive by the knowledge that during the early 1930's there was a freakish case in the United States where a man was able to receive broadcasts by means of the peculiar arrangement of the fillings in his teeth.

The windings of the coils for the crystal set on a piece of bamboo were comparatively simple since only a few turns were required for the primary and secondary. I assembled the crystal set in a KLIM (powdered milk) can about 4" in diameter and 5" high, which was also in a Red Cross package.

When I was ready to test the assembled parts, I had a collection of rocks and pieces of coal to try as the crystal detector. In the first several trials, nothing worked. I suspected lack of regeneration in the sample crystals, but wasn't sure that all other parts were working. I sought the best technical advice again from Mac to keep the discussion to a minimum. "Mac, I think you know that I've built a crystal set with an earphone."

"I'm not surprised, does it work?"

"No. Will you check out my drawing of the set to see if it is correct? Sergeant Moore will know. Do you have any ideas for a crystal?"

"I'll check."

In a few days he reported: "Moore says your wiring is OK, but suggests changes in your tuning condenser. We don't have any ideas for your crystal."

"Thanks, I suppose the crystal is hopeless, but I'm not giving up yet." I made the changes in the condenser hookup and tried more tests. At this time the conditions were so damp that I was forced to use the tin benjo roof as my antenna rather than get electrocuted by hooking up to the 220 volt line. It was not always possible to tell which side was the ground anyway. As a ground now, I used a stake wrapped with wire and driven into the earth. This terminated at a nail in the special benjo stall. I now just had to hook onto the two special nail antenna/ground terminals. Sometimes the waiting line for that stall was also a problem. When my results were still unsuccessful, I decided to consult Captain Herbert C. Freuler, one of the VMF 21 pilots and also a chemical engineer. "Herb, I need your help to make my crystal set work."

"You're want?" He hadn't known or suspected what I had been doing. He reviewed my schematic and said, "It will be a miracle if any of those pieces work."

"I know. You are a chemical engineer and I've come to you for help to solve the crystal problem. You know that we have nothing obvious to work with. Surely you can think of something that we can mix and melt that will work."

"Maybe..."

"I can get get some cement. We can get some salt, sugar, lime, iodine and maybe some other type of medicine. What shall we try?"

"Let me think about it."

In a week Herb came back with a gleam in his eyes. "I believe that if

we melt sulphur with lead, we will get a crystalline substance which might be regenerative."

"That's the most encouragement I've had. Now where do we find the sulphur?" With that he handed me a small folded paper. "Here, two spoons of sulphur that I procured from the Japanese medical supplies." I divided the loot into two batches so that I'd have a second chance. Then using my special blower for fast high temperature to melt lead scrapings and the sulphur in a bottle over a charcoal fire, I was about to have a new sample for testing. When the mixture cooled, I broke the bottle and examined the glob. It had little bright spots in it - those would be my trial points.

Upon re-assembly of the crystal set, I spent several hours in the benjo, finally picking up faint noises. It was weak but encouraging. The success with the lead sulphur crystal convinced me there was hope and I must keep trying. I guessed that the earphone was the weak link. I needed more amplification - the earphone could be made more sensitive by adding more windings. I re-arranged the spacing of the poles and began to wind... It was tedious, but then I had plenty of time. By being more careful this time, I was able to add 11,000 more turns on each nail, making 16,000 on each.

After re-assembly this time, weeks later, reception was miraculously good. By timing my benjo runs to coincide with the known Vichy and Russian English news broadcasts, I was able to get news of the war in the Pacific as well as progress in Europe. One of the first items I received from the Russian broadcast was the surrender of Italy in September 1943. I heard of the establishment of the Second Front landings in June 1944. From the Vichy French broadcasts, I heard of the battle of Leyte Gulf, where the Japanese claimed the U.S. lost all of our aircraft carriers and 5,000 aircraft. This was the first time I heard of Kamikaze attacks. I then heard of the fighting and our huge losses at Iwo Jima and Okinawa in April 1945. From the Russian broadcasts, I heard of large numbers of Germans surrendering in April 1945. These news items were relayed daily to selected POW's, who now used more care in their conversations.

This crystal set news helped us to endure the long period of captivity. It did wonders for our morale. It helped four of us to plan our escape, which succeeded 10 May 1945.

What's up at ARRL HQ? - KB5BBD

Many posts have appeared on this board lately that have been very critical of the ARRL, and particularly of HQ in Newington. A lot of these have been associated with the death of HR magazine and the content of QST. Since I didn't read HR (lack of building facilities = lack of homebuilt equipment), I tended to pass these over.

A few posts, however, described other hams' bad experiences with HQ (no replies to requests for information, poor followup on technical requests, ...). As I remember the feedback that I used to get about 2 years ago (during my 1st membership with the ARRL), I assumed (correctly or incorrectly) that *something* must have happened in order for these hams to not have received whatever they requested (problems with mail, mixup at HQ, etc.). A related story at a club meeting last night made me realize, however, that something strange is going on :

An officer of the Atlanta radio club, Jim, has spent the better part

of a year fighting a tower ordinance in DeKalb county, one of the counties in the Atlanta, Georgia area. This ordinance was originally written with commercial towers in mind, but neglected to consider amateur radio towers. Jim doesn't live in DeKalb county, but wanting to prevent any nasty legal precedents from occurring (and, being a lawyer by trade, probably enjoying things legal) set the process in motion to amend this ordinance. As a part of trying to determine what other locations have in the way of restrictions, Jim wrote a letter to HQ asking for pointers to any information that would be helpful.

On June 26th the ordinance was amended to allow amateur towers in unincorporated DeKalb county, with no height restrictions and a 1/3 setback rule. To this day Jim has yet to receive any reply either to his request for information or to his followup note.

The primary reason (in my opinion) why the ARRL is useful is that it provides the amateur community with a political and legal lobbying group. The ARRL would therefore fend off the commercial interests, and would provide legal advice (info if not counsel) to hams in need, especially when the outcome of the proceedings could affect many other operators. Considering the influence that a negative outcome in DeKalb county could have had on the rest of the counties in Georgia, I am beginning to wonder if there is something to all of the complaints on this board, and if something has indeed gone wrong in Newington.

Can anyone (preferably someone who works with HQ or the ARRL) give me a rational, non-emotional explanation for the apparent increase in inaction of HQ as of late? Are they *really* so understaffed that they aren't able to attend to matters that aren't on a national level? What can I, as a member (renewed as of a few weeks ago), do to help solve this problem? (short of quitting the ARRL: I'd rather fix the ship than jump it) Am I just overreacting, and all of this is just some fluke that will soon pass? Has the level of activity at HQ always been at this level, and have I just never noticed it?

I apologize if this question has been answered before. I can just see

a scenario where so many people have become disgusted with the ARRL that no organized national group is left to defend our interests. Scary ...

Concerned,

Ivan Yanasak - KB5BBD

DISCLAIMER: My opinion and 55 cents will buy me a Coke at Georgia Tech

Some CW procedure questions - KB6CSP

Ronald H. Nicholson, Jr., Hewlett Packard, uucp: nicholso@hpda.HP.COM, Cupertino, CA, writes:"Hi. I've got some questions that maybe the net hams could answer, at least those with experience in CW. ... I hear lots of variation in the use of things like:BT vs. periods for punctuation, one or two BT's at a time, R R R vs. FB, R R R before or after the callsigns, 559 vs 55N for the 2nd RST report, differing amounts of abbreviations, BK vs. BK TU vs. callsigns DE callsign KN, when to use AR (I've only heard it used twice), leaving out one callsign and just send DE callsign, just ending with BK and no callsigns, SK before or after the closing callsign, the dit dit at the end of contacts."

Following are my opinions based upon practice regarding some of the variations you list:

"BT" is used for a break in the conversational flow . "II" is another abbreviation sometimes used for the same purpose. In traffic handling, the various elements of the message header, e.g. message number, "II", message precedence, "II", check (group count),"II", time, "II", etc. are seperated by the double-I sequence for clarity. After the address information in a mesage, there is a "BT" - seperating the heading/address from the text about to be sent. In voice traffic handling, the "BT" is sent as "break". After the text, another "BT" is sent (in military protocol signaling the end of the message, i.e. in lieu of "AR") seperating the text from the signature information (in ARRL NTS format).

More than one BT is a long pause. The operator needs much thinking time! It is used occasionally following one message and prior to sending the next one while an operator shuffled papers, etc. The "BT's were sent to maintain "control" of the frequency and to let the other operator know that you were still there - that atmospheric conditions had not destroyed your communications path. If you really needed some time, you send "AS" meaning stand-by. If several minutes were to elapse, like while you answered a land line telephone call, you would send "AS 5" meaning stand-by five minutes.

"R R R" is poor operating practice. One "R" is sufficient, "Solid Cpy" is more succinct, and "FB" or "OK" means you at least copied the general meaning of the transmission.

"RST 559" is the correct way to send a signal report. 55N has no

defined meaning - it is absolute laziness to not send the character "9" in morse code. If the practice were uniform, your "RST 559" would become "RST FFN". The problem with this, of course is that you do not know if you received a 559, 549, or 449!

All I can say about abbreviations are that they are an apparent attempt to speed up communications. In non-standard abbreviations, at high Morse speeds (25 wpm and higher), you are doing word recognition, not character recognition; and abbreviations that are not universally known throw a glitch in the communication. Abbreviations are not good practive in International communications. Mst hv no pblms undrstndg

wht is mnt by wl frmd abbrevs lk WX, TMP, HPE CUAGN SN, TKX (or the variation TNX), bng addr as DR by DX stns whs rigs run 1TT WTTS to varius ANT on CLDY DYS WID RAIN! An unclear abbreviation could be a technical violation, considered enciphering - which is prohibited! You pays your money and takes your chances!

"BK" stands for "BREAK" - a signal used in break-in operation. Its intended purpose was to interrupt a message to obtain a fill or correct an error - rather than wait until the entire message had been sent. It is correct to use in traffic handling situations and O.K. if properly used in a normal QSO to interject a comment or thought in a conversational mode contact (most enjoyable to work someone who can do so!). Using this protocol, you are required to identify at the beginning , end and once each 10-minute operating period.

"BK TU is redundant, like "very best 73's - very best best regards's???". "BTU", sometime with a "K", meaning (I think), "back to you" seems to becoming a means of saying "Over" in CW.

"Callsign DE Callsign" " K" or "KN" ("K" means you are willing to have someone "BK"-in, "KN" means no "BK"-in allowed) is still used but was moderated by a rule change several years ago that no longer required station call transmission at the beginning and end of each transmission but only at the beginning and end of a series of transmissions with identification once each 10-minutes during the series of transmissions.

"AR" means "end of message". It is normally used at the completion of transmitting a formal message with header, text, signature, etc. Noah built and sailed an "AR K" but the useage in ham radio casual communications is incorrect and indicative of a LID operator! The only correct ueage of "AR" in ham radio is in conjunction with traffic

handling but, like other special signals, is often abused.

"DE Callsign" is an extended break-in process except when fulfilling the 10-minute identification rule. You are not required to send the other stations callsign EXCEPT at the beginning and end of a series of transmissions.

"SK", In traffic handling parlance means you have sent the last of a series of messages and have no other traffic to send. (You never send "AR""SK"). If you expect a reply, you may also send "K" or "KN". If you do not expect a reply (i.e. the other station has already sent "SK" or did not list traffic for you ,"QRU"), then send nothing else! In commercial traffic handling, the "reply" would be message traffic from the other station to you - of which you were previously advised. By sending "SK Callsign DE Callsign K", you would be saying: I have sent the last of my messages for you and am now ready to receive your message(s) for me". The useage of "SK" in ham conversation mode really has no defined meaning.

The "shave and a haircut - two bits" ditting sequence is silly and exists on the ham bands only to my knowledge! In commercial communications, it would mark you as LID - read "unprofessional" and possibly lead to your early retirement if other changes had not

already provided that opportunity.

CW QSO transcripts should be personal - not scripted. Your initial exchange should include signal report, location and name - in that order. Those three items are the most important, in order, in checking rig operation, validating a contact etc. On the next exchange, I usually include rig description with antenna, etc. Weather is optional as is age, occupation, employer, unique geographical features (live on lake, by seashore, on mountain top, in Death Valley, etc.) or whatever else may come to mind if the contact seems like one you would like to extend. Remember, many foreign hams cannot engage in contacts beyond technical exchanges - although I would believe that those restrictions are relaxing now. Like any conversation with a stranger, toss out a little bait and see where it leads. If nowhere, say 73 and move on.

73 Wayne - KB6CSP

New no-code proposal - Cliff Sharp

SODA (Save Our Desperate Amateurs) has announced that its Board of Directors has endorsed a no-code license proposal to be placed before the FCC immediately.

The POP committee (Planning and Origination of Proposals), in deciding on particulars of the proposal, came to immediate agreement that any non-original proposal by SODA would fizz out quickly. Further, taking

into account the important history of repeated reduction of requirements for Amateur licensing, the committee sought to propose a license class which would at once remove all possible objections to the difficulty of tests required for licensing, anticipate all future proposals to reduce licensing requirements, and still attract the greatest possible number of new operators.

The new class of license is to be called the Super Communications All Band (SCAB) class. The proposal calls for this to supersede the Communicator Band (CB) license class. Licensees shall be authorized to use all Amateur frequencies, with the exception of 380.999 GHz, in all modes permitted on those frequencies. The term of the license shall be 99 years or the lifetime of the licensee, whichever is greater. Licensees will be exempt from requirements in 97.67 (Maximum authorized transmitting power), 97.73 (Purity of emissions), 97.75 through 97.77 (RF power amplifier limitations), and above all 97.84 (Station identification), 97.119 (Obscenity, indecency, profanity) and 97.125 (Interference).

Under the proposal, Morse code operation will be prohibited, since all that beeping noise wastes valuable Freeband.

Current Amateur licensing privileges would be modified under the proposal, with no change in current tests, as follows:

Novice class -- all SCAB privileges, except voice
Technician class -- all Novice privileges above 1.2 GHz
General class -- Technician class privileges above 9 GHz
Advanced class -- General class privileges above 333 GHz
Extra class - all Amateur privileges between 220-222 MHz

The test for the Super Communications All Band class license shall consist solely of Element 27, a one-question examination taken from the following pool:

1. What is your address?
2. Your address is what?
3. Where should we send your license?
4. Where can we mail your license?

No fee shall be charged for this class of license; the Environmental Protection Agency has provided that the $35 license fee be paid from the SuperFund, since the new class will clear the air of all the crap about how to attract more people to use Amateur radio frequencies.

A motion was placed before the committee to require applicants to pass

a test requiring them to write their name on a piece of paper, garage door, or wall, with an indelible ink or spray paint of their choice. However, subsequent debate brought general agreement that the inability to write (or read) is, like the Morse code requirement, not relevant to a person's ability to operate a transceiver and should therefore not be made a requirement for Amateur licensing. A language requirement ("must be able to speak at least three words in a language of applicant's choice") was similarly struck down on the basis that many ideas, moods and concepts can be communicated with a simple grunt or squeak, and also because it was observed that even impediments to speech such as the Echo Box and Power Mike have not impeded the flow of communications in other radio services, and that these impediments to speech may in fact be needed by the new operators. The committee is still debating whether common operating phrases (such as "Walk, walk, walk on you" and "get off my channel, ****head") should be included in the test.

The test need not be completed by the licensee himself, but can be taken for the applicant by any party knowing the correct answer for that applicant. This establishes the ability of the applicant to establish communications, regardless of his personal participation.

To make the license widely available and thus rapidly increase the ranks of Amateur enthusiasts, distribution arrangements have been made with General Mills and Kellogg's, who have graciously consented to absorb the printing costs. This will save the government over $18 million in the next year, which can be used to fund the United Parcel Service's large-scale effort to develop spectrum-efficient monitoring of employee misbehavior.

The SODA POP committee and Board of Directors are projecting wide support for the new class of license, and anticipating rapid FCC approval of the measure, especially since the need to wait for comments (on the NPRM and the rulemaking proposal) has been eliminated during the 220 MHz matter. The NTIA is quietly and unofficially expressing great enthusiasm over, and support for, the measure. The ARRL appears to feel that the requirements are too stringent, and so is reserving comment until such time as they can modify the proposal to make it appear that it is their own proposal.

==========

R E S P O N S E

==========

FidoNet Ham/Packet Digest Questionare

Name: _____

Address: _____

City: _____

State/Province/Other: _____

Country: _____

Are you an Amateur Radio Operator? _____

If so, what is your call sign? _____

How long have you been licensed? _____

In a few brief comments, could you tell me what you like, or dislike about the Fidonet Ham/Packet Digest? Your feedback is appreciated!

Please mail this back to : Brian J. Murrey - KB9BVN
PO Box 47453
Indpls., IN 46247-0453
United States of America

Thank You !